

METHOD OF FORMING DOUBLE LAYER CU DIFFUSION BLOCKING FILM

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Inventor(s): SOUN SUUN CHUN;; CHON UUKU PAHK;; DON UON KIM;; UON JUN LII;; SA KYUN RA;; SEUN YUN LEE;; KYUN IRU LEE
Applicant(s): LG SEMICON CO LTD
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Abstract

PROBLEM TO BE SOLVED: To well suppress Cu from diffusing by forming a first barrier metal layer between a substrate and Cu film and second Cu alloy-made barrier metal layer on the first one.

SOLUTION: A first barrier metal layer 102 is formed between a substrate 100 and Cu film 106 and second Cu alloy-made barrier metal layer 104 formed on the first one. The layer 102 is made 100-1000 angstroms thick, e.g. using a TiNx, TiWx, Ta, TaNx, WNx, TaSix Ny or TiSix Ny. The layer 104 is made 100-1000 angstroms thick. e.g. using a Cu-Zn, Cu-Ti, Cu-Mg or Cu-Ta alloy, by the chemical vapor deposition or physical vapor deposition method and Cu-Zn alloy preferably contains Cu 88-97wt.%.

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